

May Day II.

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Technology and regulatory reform are turning the over-the-counter market on its head.

THE OFFICES ARE DARK, CLUTTERED, DIRTY. HUNDREDS OF twisted cables dangle from punched-out ceiling panels in a backup communications room. In the main conference area, a little-used vacuum cleaner stands beside stacked cartons of plastic soup spoons.

These are the premises of a private computerized trading outfit that matches up customers looking to buy and sell Nasdaq-listed stocks. It doesn't guarantee instantaneous execution, though that's what it often provides. Its clients pay no more than one quarter of a cent per share, a fraction of what they would pay to trade through a brokerage firm.

The company is called Island ECN; it has 19 employees -- average age, 25 -- none of whom trade. And each day it claims to turn over some 95 million shares, or 10 percent of the daily volume in Nasdaq stocks.

Welcome to the future of trading.

These are extraordinary times in the over-the-counter stock markets. Newspaper headlines trumpet the exploits of madcap day traders; market indexes swing on the manic volatility of hot Internet issues; trading glitches prompt near-daily cautions from regulators. Just last month 28 of the biggest OTC market makers signed off on an agreement with the Securities and Exchange Commission to pay \$26 million in fines on top of the \$910 million they had previously paid out to settle private class-action lawsuits, based on charges that they had essentially fixed prices for years.

But these are just the most visible signs of what may prove to be the most sweeping transformation of Wall Street's trading business since the first shares changed hands. Dealer resistance and regulatory inattention held back the forces of change for years; now SEC-mandated reforms have unleashed the power of technology to dramatically alter the dynamics of the business, seemingly overnight. Island, whose electronic communications

network, or ECN, functions as quasiexchange-quasibroker, did not exist until three years ago, when it was spun off by on-line brokerage Datek Online Holdings. Knight/Trimark Group, a technology-intensive cooperative of dealers formed just four years ago, today commands 11 percent of the OTC market - posting orders for more block-size trades on a given day than Merrill Lynch & Co. and Salomon Smith Barney combined.

The hype of Internet stocks will fade, and today's enormous trading volumes may wither -- perhaps taking upstarts like Island with them -- but Wall Street will continue to confront these changes. Trading is all about information and communication. No technology is proving more powerful than the Internet, and no business is more ripe for transformation than Wall Street's trading and execution function: not book selling, not airline ticketing, not even the auctioning of collectibles. It's no surprise that Instinet Corp., the precursor to today's ECNs (see box, page 50), is owned by Reuters Holdings; or that Bloomberg launched Tradebook, another ECN; or that Dow Jones & Co. has invested in an alternative trading system called OptiMark Technologies.

"The impact on our lives of the changes going on in technology and communications will be as significant as the industrial revolution," says Arthur Pacheco, onetime co-head of Nasdaq trading at Bear, Stearns & Co. and now chief executive of Strike Technologies, a newly formed rival to Island, owned by 18 brokerage firms and Sun Microsystems. "Why wouldn't those changes affect the trading business, which is so much about technology and communications?"

Call what's going on May Day II. The first May Day for Wall Street came on May 1, 1975, when the practice of fixed commissions on listed stock trades was ended. The clubby world of the New York Stock Exchange was shattered, and a new era was born. Institutional investors rose to power; newborn discounters, such as Charles Schwab & Co., seized retail market share; lower margins forced a wave of consolidation among old-line, mainstream firms.

Just as it was then, today's balance of power is in flux, new players are emerging and the economics of the business have radically deteriorated. Spreads have shrunk, and execution costs have dropped to almost nothing. "When spreads were one eighth, you used to trade flat 40 percent of the time, lose money 10 percent of the time, and make money 50 percent of the time," says Fredric Rittereiser, former head of Nasdaq market maker Sherwood Securities Corp. "It's no longer possible, in a world of sixteenths, for a trader to make money."

For now, record volumes are keeping most trading desks happy and

profitable, but fierce competition has led such once-dominant OTC dealers as Merrill and PaineWebber to slash their market-making activities and cut the number of OTC stocks they trade by nearly half. When volumes drop, the advantage will swing even further toward the low-cost executors. That's one reason so many cheap electronic systems have been created in the past two years; nine ECNs (including Instinet) now compete for orders.

"For the dealer community what has been going on in the last 24 months is a bigger deal than May Day," says William Lupien, formerly head of Instinet and now chairman of Opti-Mark, which late last month launched the newest electronic trading system for institutions to trade blocks of OTC and NYSE-listed shares. "I haven't seen anything that comes close to this for dealers."

Change is messy - and the fast-evolving market reflects that. One thing appears certain: The trading world won't look anything like it did yesterday - or today. "You will not recognize these markets in five years," promises Frank Zarb, chairman of the National Association of Securities Dealers.

Five years? Try five months. Consider:

* Sometime this summer the NASD will have decided whether to propose a plan to convert Nasdaq into a for-profit system that might include spinning it off as a public company (see story, page 67).

* Island is applying to become a full-fledged exchange to rival Nasdaq, a move that will allow it to pursue institutional investors and trade NYSE-listed stocks.

* Scrambling to profit - somehow! - from the radical restructuring of their business, Wall Street's leading firms are lining up to back rival electronic start-ups, in some cases placing bets on more than one system. One example: Goldman, Sachs & Co., a backer of OptiMark, joined with on-line broker (E.sup.*Trade Group early last month to each invest \$25 million in a fledgling ECN called Archipelago. Goldman already had a stake in another ECN called Brut.

The changes that first swept through the Nasdaq retail market are just about to break out into the institutional and NYSE-listed business. But they may yet extend much further, for Wall Street is, after all, a bundled business where research, trading and banking often are sold together.

"I'm not arrogant enough to say that what we are doing is necessarily

the endgame," says Matthew Andresen, the 28-year-old president of Island. Well, maybe a tiny bit arrogant. Each day, he walks past the floor traders huddled outside the New York Stock Exchange swapping stories and smoking cigarettes. He says, "I always think, 'If they only knew what was going on a couple of doors away.'

THE MARKETPLACE FOR THE NEXT 100 years, as Nasdaq used to call itself, was, not long ago, yesterday's news. Until Nasdaq was created in 1971, the over-the-counter market was merely the place where Wall Street dealers traded shares too small to be listed on the NYSE or other stock exchanges. As recently as the 1960s, one of the few sources of centralized price information was a list that the NASD, the dealers' self-regulatory organization, arranged to distribute -- on paper, each morning. The list included only the 3,000 most active companies among some 8,000 OTC stocks being traded.

A closed, private world, the OTC market minted money for dealers. Bid-offer spreads remained wide thanks to informal collusion. Even on the most actively traded stocks spreads almost never narrowed between "even eighth" increments -- in other words, 2/8 to 4/8 to -- which works out to a dealer's take of 25 cents per share per trade. Investors complained bitterly about OTC trading costs, but regulators looked the other way, devoting their attention to the NYSE, where by far the greatest dollar volume of shares traded hands.

The disjointed over-the-counter market was ripe for technology's efficiencies, particularly given the near-fatal paper crunch on Wall Street in the late 1960s. But major dealers resisted change. In 1969 two entrepreneurs, Jerome Pusilnik and Herbert Behrens, introduced a system called Institutional Networks Corp., later renamed Instinet, which allowed the burgeoning class of institutional investors to trade over-the-counter stocks among themselves, without a middleman. But unable to generate initial liquidity, the system floundered.

Nonetheless, regulators did help push technology into the OTC market. In 1971, under pressure from the SEC, the NASD signed up Trumbull, Connecticut-based Bunker Ramo Corp. to build and run Nasdaq, a telecommunications network running on a Univac 1108 mainframe that displayed quotes in the trading rooms of more than 500 market makers. To execute a trade these dealers still had to call each other by telephone, but Nasdaq began to unify a market fragmented among wholesalers like Herzog, Heine, Geduld, which made markets in thousands of OTC stocks, and the integrated firms or wire houses like Merrill Lynch, which made markets in the larger Nasdaq stocks to accommodate their customers.

Though May Day 1975 rule changes were aimed mostly at the trading of NYSE-listed stocks, they also gave a boost to the Nasdaq market. A national market system took shape in which all trades, whether listed or OTC, began to be reported on a single electronic "tape," adding transparency to the market. Rule 19c-3, which went into effect in 1980, allowed NYSE member firms to trade new listed stocks off the exchange floor -- in the so-called third market -- prompting greater business for dealer desks. Trading volumes on Nasdaq soared almost fivefold, from 1.4 billion shares in 1975 to 6.7 billion shares in 1980.

Wall Street's OTC business came of age in the 1980s. Volume shot up, but spreads remained wide, because regulators had never specifically addressed them. The equity bull market began to roar, and one hot young technology company after another -- Apple Computer, Intel Corp., Microsoft Corp. -- listed on Nasdaq because they were too small or risky to qualify for the Big Board.

With Nasdaq spreads so wide, some dealers realized they could actually pay any of the hundreds of smaller, often regional, brokerage firms to send them their customers' orders; these wholesalers could execute the orders within the spread and make a killing on the volume. Bernard L. Madoff Investment Securities pioneered this practice, first in the OTC market and later with NYSE-listed stocks in the third market (see box below). Payment for order flow was controversial, because brokerage firms, not the retail customers that placed the orders, received a rebate for sending orders to a particular dealer.

Payment for order flow was only one of the odd business practices that fat spreads and illiquidity allowed. There were other such "preferencing" arrangements that ensured that many Nasdaq stock orders were sent to specific market makers -- even if they were not the first trading desk to put up the best quotes. Market makers could attract order flow, for example, by guaranteeing to fill order sizes larger than those promised in their quotes or by promising to improve the prices on orders.

By 1987 Nasdaq was averaging some 150 million shares traded per day, arguably approaching the 189 million on the NYSE. (The data are not strictly comparable, because of the structural differences of the NYSE auction system and Nasdaq's multiple-dealer system.)

Then came Black Monday, when OTC market makers showed how flimsy much of the market structure really was. As stocks plunged, many traders refused to pick up their phones, freezing liquidity and exacerbating the rout in share prices.

The NASD reacted to this unmitigated -- and very public -- disaster by introducing new electronic trading links designed to ensure orderly trading in falling markets. The systems -- like many new technologies -- soon proved to have dramatic, unintended consequences.

After the crash the NASD tried to win back skeptical individual investors by forcing dealers to participate in a little-used electronic automated trading system called the Small Order Execution System. Customer orders of fewer than 500 shares sent through SOES were routed to market makers with the best posted quotes and automatically executed. The NASD also expanded an electronic system called SelectNet, which allowed market makers to negotiate and execute trades over their Nasdaq terminals, rather than by telephone, in the largest stocks.

SOES and SelectNet looked like simple fixes. But they weren't. Its automatic execution feature meant that SOES was now the fastest way to trade Nasdaq stocks. As a result, a new group of traders -- quickly dubbed SOES bandits by their critics -- began using this automated execution feature to earn profits by picking off quotes that dealers had not had time to update in the fast-moving market.

The Nasdaq community boiled over as market makers tried to force SOES bandits out of the marketplace, lobbying for new regulations. They met with some resistance from regulatory officials. "I remember back when we were going down to Washington to complain about the SOES effect," says Peter DaPuzzo, former head of Nasdaq trading for Shearson Lehman Brothers and now head of equities at Cantor Fitzgerald. "There were some at the Securities and Exchange Commission who regarded these SOES fellows as true arbitrageurs and beneficial to the market."

No matter: Pandora's black box was open. Nasdaq's wide spreads, formerly open only to Wall Street's market makers, had attracted a new, technology-savvy crowd determined to find ways to extract profits from it. Many of the creators of the ECNs now springing up first got a taste of the spoils of the OTC market as SOES bandits. Datek's three young founders, Jeffrey Citron, Joshua Levine and Peter Stern, made their first fortune developing software for SOBS traders.

As it happened, however, it was not the SOES traders, but a couple of then-obscure finance professors, who sparked the current metamorphosis of Nasdaq. In 1994 Vanderbilt University professor William Christie and Ohio State University professor Paul Schultz published an academic paper in The Journal of Finance noting the unusual absence of odd-eighth quotes in the Nasdaq. They concluded that this was evidence of implicit collusion among Nasdaq market makers to keep spreads artificially high.

Nasdaq would never be the same. The Justice Department launched an antitrust investigation against dealers, and the SEC began a review of the NASD'S performance in policing the markers. Class-action lawyers filed dozens of lawsuits against all major Nasdaq market makers. In December 1997 dealers paid \$910 million to settle the private lawsuits, and last month they agreed with the SEC to pay back investors an additional \$791,000, plus \$26 million in fines. The SEC imposed an unprecedented censure on the NASD for failing to fulfill its regulatory responsibilities, setting in motion a thorough revamping of that self-regulatory organization. Most important, the SEC began to impose new rules on Nasdaq that would open the door for competitors.

Christie's Nasdaq paper made him famous, but the Vanderbilt professor insists that market makers brought the changes upon themselves. "There was a festering resentment against Nasdaq market makers because of their spreads," says Christie. "We just stepped into the middle of it."

IF THE CURRENT FERMENT IN THE MARKETS had begun on May 1, 1997, the symmetry with the '70s would have been exquisite. But May Day II dawned on January 20, 1997.

On that day the SEC imposed new order-handling rules on Nasdaq dealers that radically changed the marker-making business. First, the SEC required the NASD to allow ECNs access to the Nasdaq trading and quotation systems -- including SelectNet And it also promulgated the Limit Order Display Rule, mandating that customer limit orders of between 100 and 10,000 shares that bettered a dealer's own price quote must be reflected in the dealer's quote or forwarded to an ECN that would display the order. ECNs are trading systems that collect commitments to buy and sell stocks. Subscribers enter anonymous limit orders, hoping to attract a matching price. "What we offer is a facility for working an order," says Island president Andresen. "Island is just a tool. Any time a customer meets a customer, two people have traded without a spread."

Before the rule changes, market makers could sit on customer offers that they found disadvantageous. Within weeks spreads on many Nasdaq stocks were cut by 30 percent.

The SEC had achieved its goal, but these rule changes produced unforeseen consequences. The new order-handling rules opened the door to competition just as Internet technology was exploding on the scene, creating the extraordinary new on-line brokerage businesses. These on-line operations redefined the retail discount market by pushing commissions below the old standard of \$10 per trade, bringing an entirely new - and aggressive - class of retail customer into the market. "With the new

order-handling rules, the commission effectively nationalized access to liquidity," says Kevin Foley, manager of electronic trading for Trade-book, Bloomberg's ECN. "They said liquidity belongs to the public, and that has lowered the barriers to entry for the new trading systems."

In essence, the on-line firms created a new breed of traders that would roil the market more dramatically than had the SOES bandits: individual investors powered by sophisticated and powerful technology. And this happened, of course, just as the national obsession with stock trading turned into a frill-fledged mania, thanks to the exploding number of public Internet companies.

This new source of trading volume created opportunities. Knight/Trimark, a mid-tier market maker partly owned by on-line brokers Ameritrade Holding Corp. and E*Trade, saw an immediate and explosive jump in market share. ECNs sprouted up, and they too began to eat into Wall Street's business, led by Datek's Island ECN. Datek poured its tens of thousands of orders per day into Island, providing the initial liquidity that jump-started the ECN. With that initial liquidity, brokerage firms and even market makers were willing to send in more orders.

Retail customers came pouring into the market just as some market makers began to beat a hasty and anxious retreat. "In September 1997 we announced that we went from making markets in 850 down to 550 stocks as a result of a necessary realignment of our resources, as a result of the changing economics of the business," says Merrill Lynch's Thomas Wright, managing director of Nasdaq sales and trading. Since then the firm has eased back into the market, if not as deeply as before, and it acts as a broker for stocks in which it doesn't make markets. "We feel we are as big a factor to our important client constituents as we have ever been," says Wright.

Most of the firms with big retail operations followed Merrill's lead. Devoting capital to a business that offers diminishing returns makes no sense. Says Richard Sinise, senior portfolio manager for St. Louis-based Kennedy Capital Management, which manages about \$2 billion in small-cap stocks and trades roughly 200,000 shares each day, "We've definitely noticed that the traditional broker-dealers have pulled back significantly -- mainly because it's getting easier and easier to lose money in these stocks if you don't have someone on them full time."

Now, when a Merrill customer wants a stock in which the firm no longer makes a market, Merrill will outsource the trade to a wholesaler like Knight Securities, the OTC arm of Knight/Trimark. "Five years ago firms used to make \$50 gross per ticket; today it's \$8.60 gross per

ticket," says Walter Raquet, chief operating officer of Knight/Trimark. "For the bulge-bracket firms, it's easier to have someone else do it that has a lower cost of trading."

The on-line trading firms and their legions of day traders have provided a flood of volume that has benefited all dealers. But many veterans worry that today's boomtown environment simply can't last. Kenneth Pasternak, Knight/Trimark's CEO, was shocked recently to meet a dentist who had converted one of his examination rooms into a trading room, so that he could punch in orders between drillings. Says Pasternak: "In the 20 years I've been in the business, I've known at least 20 traders who've tried to make it on their own. I don't know of one who has yet. If the pros have this kind of trouble, what chance do the dentists have?"

And some pros are indeed having trouble. Primary among them are many institutional investors who focus on over-the-counter stocks. To their chagrin, the so-called SOES bandits are still active, pummeling stock prices seemingly at random. "These days you can go to lunch, come back, find your stock SOESed and be losing money," complains Kennedy Capital's Sinise.

"The whole market has turned into a SOBS shop," says Harold Bradley, vice president and senior portfolio manager for Kansas City, Missouri-based American Century Investment Management. "There's intense buying pressure placed in almost any situation."

In fact, some institutional traders now worry that retail traders are actually gaining an edge over them in the market. "Individual traders now have a lot of the same tools we institutions do: real-time quotes, push-button execution, the charts," says Peter Jenkins, managing director for global equity trading at mutual fund family Scudder Kemper Investments, which manages some \$400 billion in assets. "But they can deal in small amounts. They have an advantage."

The big advantage: The new order-handling rules allow small orders to jump ahead of larger orders, picking off quotes in fast-moving markets and putting the big institutional orders of pension and mutual funds at a disadvantage. "The commission is in danger of putting too much focus on technology alone and not looking beyond the technology to look at what is being done with it," argues Douglas Atkin, 36, chief executive officer of Instinet. "The focus of the new rules has been on the individual investor as retail investor, but the individual is also served by mutual funds and pension managers. When dealing with market structure, we have to make sure the changes don't bring unintended consequences."

To be sure, retail investors, the SEC'S prime constituency, have reaped tremendous benefits amid the confusion. The Nasdaq market today is fairer than it's ever been. Some big institutional investors have cut their trading bills dramatically too. Vanguard Group, which manages \$125 billion of equity funds in-house, has saved between 10 and 20 basis points - or \$100,000 to \$200,000 - per \$100 million of trades as a result of the changes in Nasdaq spreads, estimates George (Gus) Sauter, managing director responsible for Vanguard's internally managed equity funds. Those savings exceed the gains from stock lending, a popular technique used to boost index returns, he adds. Another big investor, American Century's Bradley, who pays \$80 million in commissions annually, says he may be doing 50 percent of his business electronically within three years.

While ECNs and market makers compete fiercely for business, the ultimate effect of these new trading systems on the overall market remains unclear. Already overloaded Nasdaq systems are straining to handle the growing volume of orders and electronic messages, and some observers worry that the whole system will just stall one day in a costly "brownout." Cheap execution is great, but the hidden costs to small investors from trading in and out of the market could easily exceed the price they paid for excessive spreads on the old Nasdaq. Nonetheless, academics and regulators who survey the market continue to insist that the benefits of cheaper trading far outweigh any supposed decline in liquidity.

In the meantime, market participants are struggling to find some way to contain - or at least make some sense of- market anomalies. The stakes, and tempers, are high. In recent months about a dozen representatives from a number of different Nasdaq constituencies have gathered four times at the request of Bernie Madoff, head of the Securities Industry Association's trading committee, to hash out ways to reduce the wild volatility in Nasdaq stocks, Among the participants: Jeff Citron, chairman of Datek; Richard Shenkman, vice president of Instinet; Emanuel (Buzzy) Geduld from Herzog Heine; and Tom Wright of Merrill Lynch. The result? Nothing. The ad hoc group broke up after failing to agree on a proposal for trading halts. Reports one attendee: "They were screaming at each other."

The immediate future may be uncertain, but American Century's ever provocative Bradley, speaking for many, certainly feels no nostalgia for the old ways. "The trouble, to my mind, comes because the big wholesalers refuse to change their business model to go with the times," he says. "Instead of blaming day traders, they should look at what they've wrought."

LAST MONTH GOLDMAN SACHS and (E.sup.*Trade reportedly each invested \$25 million to take a combined 50 percent stake in a Chicago-based ECN called Archipelago. The move raised eyebrows, not least for the valuation

it put on ECNs, given Archipelago's minuscule market share. For an on-line broker the move was natural, but what's in it for an institutional house like Goldman?

Certainly, there are considerable risks. New NASD rules, especially a proposal that would allow firms to post a separate quote on Nasdaq for customer limit orders, could eliminate some of the market maker orders flowing to ECNs.

And ECNs remain young, raw and unproven in brutal conditions, not to mention a bear market. After studying the Asia-related slide in stock prices in October 1997, the SEC concluded that several of the ECNs proved to be the weak links in the order-processing chain. And in a staff legal bulletin published in September, the commission hinted that it might prosecute firms that fail to build adequate capacity to handle spikes of up to three times average daily volume. "Broker-dealers who are unable to consummate all their securities transactions promptly," reads the policy statement, "increase the likelihood of action taken against them if... they advertise, employ additional salesmen, or take any other action designed to expand the volume of their business."

But Goldman isn't simply betting its money on a wild throw of the dice. Owning a stake in an ECN provides some clear-cut benefits. Institutional firms can, for starters, cut their monthly Instinet bill. For market makers looking to farm out customer limit orders, instead of incorporating them into their quotes, an affiliated ECN is a cheap place to send those orders.

The best reason, however, to invest in these systems is a more farsighted one: No one thinks the vast changes under way in the Nasdaq market are going to stop anytime soon, and the transformation of trading seems headed inexorably toward listed markets as well. ECNs may turn out to be a stopgap technology, built on the passing mania of a bull market, but the move to electronic trading is here to stay. "Firms are investing in all these different systems because of the uncertainty," says John Havens, head of global equity sales and trading for Morgan Stanley Dean Witter, which has itself invested in Brut and, through its Discover Brokerage Direct unit, in Knight/Trimark as well. "I think there are going to continue to be a lot of moving deck chairs."

It's not surprising that so many firms are betting on so many different operations. As Wall Street has changed over the past two decades, the major firms have come to have a variety of interests -- at times conflicting -- in the markets. They have money management arms that demand cheap, quality execution; they act as brokers for rival institutional

investors; and they cater to retail clients. Now, too, they have direct pipelines to the on-line world. In 1996 Dean Witter Reynolds bought a tiny Internet brokerage company called Lombard Brokerage for \$70 million. Internet brokerage was new, so the acquisition passed virtually unnoticed, but the renamed Discover Brokerage Direct would by current market valuations be worth north of \$1 billion as a public company, and, of course, it's part of Morgan Stanley Dean Witter. Donaldson, Lufkin & Jenrette, once the quintessence of an institutional firm, owns DLJ Direct, one of the hottest on-line brokers.

Late last month what may be the boldest electronic trading venture of all went on-line. OptiMark, which was co-founded by former Pacific Stock Exchange specialist and ex-instinet chief Bill Lupien, has perhaps the most intriguing backing of all. Its powerful partners include Goldman, Merrill and none other than Nasdaq itself -- even though OptiMark will inevitably compete with NASD's own members. The new system aims to offer the most sophisticated means yet for trading without middlemen, allowing traders to enter "profiles" that indicate how many shares they would like to trade given different prices. OptiMark's proprietary algorithms will match the profiles to create supposed "optimal" trades. It will target NYSE-listed stocks as well as Nasdaq stocks.

OptiMark, like any new trading system, faces a chicken-or-egg dilemma in attracting orders. Investors won't use it unless it offers liquidity, and it won't have liquidity unless lots of investors use it. But the markets have been changing in such a fast and furious manner that Lupien, age 57, now faces a host of new competitors that didn't exist when he started developing the notion in 1995. "This is my last trading system," he says. "I'm getting too old for this."

REVOLUTIONS EAT THEIR YOUNG. FIVE YEARS from now Andersen and his brash colleagues may be gone from the scene. They may or may not have cashed out for tens or even hundreds of millions of dollars. But the market revolution they helped foment will live on. "It's like rolling a snowball down a hill," says Credit Suisse First Boston electronic commerce analyst Bill Burnham. "The first hundred yards you have to push really hard. But eventually it starts crushing everything in its path."

Can Island reach the mainland?

CAN AN UPSTART ELECTRONIC trading shop make the transition to institutional respectability? Island EON and parent company Datek Online Holdings are ready to find out.

In December the island trading system began what could be a yearlong

regulatory process to register as a full-fledged stock exchange, which would allow it to trade New York Stock Exchange--listed shares. Right now Island matches a torrent of retail buy and sell orders from other brokers and day-trading firms. It sees the ability to trade NYSE shares as critical to at trading institutional investors' interest.

Island is starting to put together the necessary infrastructure; as well as regulatory and compliance systems, which it thinks could cost up to \$20 million. Last month Island hired a former Securities and Exchange Commission lawyer, Cameron Smith, to be general counsel and oversee the application.

Even with Island's January average daily trading volume of 95 million shares, some Nasdaq market makers argue that the electronic communications network's efforts will fall short - that most institutional investors won't be able to match many trades with Island's overwhelmingly retail customer base. But one of Wall Street's largest institutional investors already puts through trades on the system. "The liquidity is not quite there," concedes George (Gus) Sauter, who oversees \$125 billion in equity mutual funds for Vanguard Group. "But I can get orders done."

Island may also have to answer questions from institutions about a lingering problem from Datek Online's past, when it used to cater solely to day traders through a brokerage firm called Datek Securities. Last May The New York Times reported that the office of the Manhattan district attorney was investigating the Datek day-trading subsidiary's possible involvement in a money-laundering scheme and that the SEC was examining whether the unit was part of a stock manipulation scheme. At the time, Datek denied any wrongdoing, calling the charges "baseless" and "defamatory." To date, no charges have been brought, but the Times this month again raised the possibility of an ongoing investigation by the DA. A Datek spokeswoman noted that the day-trading subsidiary was sold last March, but declined to comment on the status of any investigations. A spokeswoman for the Manhattan DA says her office does not confirm or deny investigations.

Credit Suisse First Boston analyst Bill Burnham argues that the allegations have nothing to do with Datek's on-line brokerage business or the Island trading system and that the problems could be related to independent traders who used Datek's facility. Island and Datek, in any case, will guarantee themselves maximum scrutiny by going the exchange-registration route. "As far as I know," says Burnham. "They're trying to be model corporate citizens."

H.L.
Generation gap

BERNARD MADOFF HAS MADE A career of breaking down the walls of the stock market establishment, helping to revolutionize the way shares are traded over the counter. Today he's trying to bar the gates against a new wave of insurrectionists.

Founded in 1960, Bernard L. Madoff Investment Securities started by sifting through the convertible bond business for opportunities left over by more-established brokerage houses, such as Goldman, Sachs & Co. Increasingly mainstream - at least in the OTC marketplace -- Madoff's firm was one of the original five that formed the National Association of Securities Dealers Automated Quotation system in the early 1970s. As chairman of the NASD national market design committee in the late '70s, Madoff was in on the ground-floor discussions that led to the creation of the Intermarket Trading System.

In the '80s Madoff pioneered the controversial "payment for order flow" practice, offering cash to other brokerage firms for the right to execute their OTC trades; he made a tidy profit by capturing a portion of the spread between the stocks' bid and asked prices. Once he perfected that volume-driven business, he began paying for order flow in shares listed on the New York Stock Exchange, trading them off the exchange floor in the so-called third market. His success spawned imitators, causing grave distress among NYSE executives, who protested what they called an unfair gaming of the system, as Madoff and his competitors lured trades away from the exchange. In the first quarter of last year, third-market trades represented about 16 percent of the trade reports in NYSE and American Stock Exchange stocks, according to the NASD, or 6 percent of total dollar volume.

Madoff, whose firm says it accounts for some 10 percent of the trades in NYSE-listed stocks, finds himself in an odd position: Today the 60-year-old is part of the establishment, and he's railing against the newfangled electronic communications networks and their legions of day traders. I'm more aware than most of how easy it is to trade and how narrower spreads and lower costs have brought more to the table," says Madoff. That being said, easy access has its dangers."

So convinced is Madoff of an impending disaster that he has stopped making markets in a handful of leading Internet stocks, including Amazon.com, Infoseek and Yahoo!, because he thinks the trading is out of control. "I wanted to send a message," he says. "The pain in some of these stocks is going to be severe."

J.W.
Instinet vs. Internet

BEFORE THERE WAS AN INTERNET, before there were electronic communications networks, before there were so-called SOES bandits, before there was even a Nasdaq -- there was Instinet Corp. Founded in 1969, Instinet was the original black box. Promising to let institutional investors buy and sell their shares without going through their brokers, it threatened to replace stock traders with a computer.

In fact, Instinet never replaced a soul -- in good part because it got off to a slow start that lasted for more than a decade. Eventually, though, Instinet caught on, and not only with investors, but also with stock traders, who used it to monitor the "inside" market -- the indications of institutional interest in trades--as well as to trade between themselves. Instinet's trading volume, and its revenues, soared in the booming 1980s stock market, and in April 1987 Reuters Holdings bought the company for \$111 million in cash and shares.

Instinet has proved a worthwhile purchase, though earnings have slowed lately. In the first half of 1998, it posted profits of \$124 million on revenues of \$348 million, compared with a profit of \$128 million on revenues of \$311 million in the same period a year earlier. Today Instinet claims to account for about 18 percent of Nasdaq's average daily share volume.

Now Instinet finds itself under attack from a new wave of rival electronic exchanges empowered by revised Nasdaq order-handling rules that force market makers to display all customer limit orders. These networks, riding massive order flow from day traders and using new technology, are offering mind-bogglingly cheap execution costs. James Marks, electronic commerce analyst for Deutsche Bank Securities, contends that two-year-old Island ECN could surpass Instinet's share this year. Although the different trade reporting methods each service uses make market share comparisons problematic, Instinet claimed an average 143 million shares traded per day in the second half of 1998, while Island claimed an average of 73 million per day in the fourth quarter.

The aging revolutionary is adapting quickly to the new revolution however, repositioning itself as more than just an ECN and providing such client services as research and analytics. "We're a global commission broker. To call us an ECN just doesn't make any sense. These rent-my-quote ECNs are competition that affects everyone," says Douglas Atkin, CEO of Instinet. "We did well before the order-handling rules. We did well after the order-handling rules. They affected us and every competitor in the market."

He notes that profits fell off slightly last year because of an \$80

million expansion in Europe and a new push into Asia. Moreover, Instinet has just begun to strike deals with vendors of order management and routing systems, such as FlexTrade Systems and Javelin Technologies, allowing clients to use the system through third-party terminals. That's a radical departure from the days when the customer's only choice was Instinet's black box. J.W.

Day traders' Knight

HOW FASTS THE OVER-THE-COUNTER market for stocks changing? Last year a brokerage firm formed in 1995 grabbed a larger share of OTC trading than giants Merrill Lynch & Co. and Salomon Smith Barney combined. Operating from spartan offices in Jersey City, just across the Hudson River from Wall Street, Knight Securities claimed 11.23 percent of all OTC trades, reaching up to 15 percent on some days.

Knight is the OTC broker-dealer arm of Knight/Trimark Group, a publicly traded company founded by a group of 25 relatively small superdiscount brokerage firms that decided to band together rather than fight for trades. By forming a joint venture to handle all their OTC trading, the firms could slash the high costs of maintaining their own trading desks and gain the scale efficiencies of very large dealers.,

Knight is the brainchild of Kenneth Pasternak, CEO, and Walter Raquet, COO, two OTC veterans who until 1994 worked for Spear Leeds & Kellogg/Troster Singer, a major OTC trading house. The pair got the idea from Lawrence Waterhouse, chairman of discount brokerage firm Waterhouse Securities. "He worried that he would eventually lose control over the execution quality as the result of brokerage mergers," recalls Raquet. "He was too small to support a dedicated market-making operation. But five firms together could provide enough order flow."

Raquet and Pasternak took a flier and found not five but 25 partners, including a couple of then-brand-new on-line brokerages. Upstart on-line brokerage firm E*Trade Group, which at the time had \$1.3 million in capital, put \$500,000 into the partnership, originally called Roundtable Partners.

The on-line operations were the rocket fuel for Knight's business. The company won't reveal its order flow with individual customers, but analysts estimate that about one third of its business comes from the on-line brokerage firms, especially E*Trade. This could be a chink in Knight's armor, especially now that E*Trade has taken a major stake in an electronic communications network called Archipelago and could divert order flow from Knight. But Knight is diversifying and expanding as well. For the

fourth quarter of 1998, Knight says 18 percent of its revenues, or \$21 million, came from institutions, and it intends to double its institutional sales force, to 50, in 1999. It, too, is trying to stay on top of the new technology, investing alongside such mainstream brokerage firms as Morgan Stanley Dean Witter in a start-up ECN aptly known as Brut, for Brass Utility.

Jack Willoughby

Anticipation is making managers buy software.

Hemmerick, Steve

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ABSTRACT: European and U.S. money managers anticipating acquisitions in Europe and or entry into the deregulated Japanese market are buying investment management software. According to Robert Leaper of Thomson Investment Software, such money managers are buying software because they want to be able to standardize systems throughout their operations in order to cut software maintenance costs.

TEXT:

BOSTON -- Some European-based money managers are buying investment software, anticipating manager consolidation in Europe, said Robert Leaper, a director for Thomson Investment Software.

Expansion of European and American money managers into Japan also is driving software sales, said Mr. Leaper, director of business development for Thomson's PORTIA portfolio management software and OpenTrader securities trading software.

"Borders are breaking down," he said, making it easier for money managers to expand into European countries.

Money managers planning mergers or acquisitions, he said, want to have current software to standardize branch offices in each country.

The anticipated consolidation of managers, he said, is similar to the expected consolidation of other businesses in European countries.

Financial deregulation in Japan also is driving investment software sales, he said. European and American money managers are planning, or already setting up, offices in Tokyo.

In some instances, he said, they are buying software to standardize globally, which allows money managers with offices around the world to reduce software maintenance costs by cutting back on computing staff.

One firm, Deutsche Asset Management, Frankfurt, Germany, has selected Thomson's PORTIA software, which Deutsche Asset will use to centralize its operations by linking German offices in Berlin, Hamburg, Stuttgart, Munich, Dusseldorf and Hanover to the main data hub in Frankfurt, said Thomson and Deutsche officials.

Deutsche Bank Group is PORTIA's largest global client, with more than 350 users in six offices outside of Frankfurt.

Graham Mellor, managing director of Oppenheimer Capital Inc., New York, said his firm recently selected PORTIA partly because it wanted software with "impeccable" data conversion and client support capabilities. Oppenheimer primarily manages discretionary, value-oriented equity assets for institutions and other clients.

The \$71.7 billion New York State Teachers' Retirement System, Albany, and the \$1.2 billion AFJP Previnter, Buenos Aires, Brazil, announced in January the licensing of PORTIA, replacing older portfolio accounting systems.

Candice Ronesi, a spokeswoman for the New York teachers fund, said fund officials chose PORTIA partly because of the level of training, documentation and customer support it provides.

Guillermo Donadini, AFJP Previnter chief investment officer, said PORTIA has an entrenched client base in Latin America and offers local support for the software. PORTIA has regional offices in Buenos Aires, Mexico City and Sao Paulo, Brazil.

Separately, Thomson announced it has licensed PORTIA and Thomson OpenTrader to Svenska Handelsbanken, Stockholm.

Initial implementation at the Swedish bank will include support for more than 100 PORTIA and Thomson OpenTrader users. Svenska Handelsbanken will use the new software to replace custom in-house software.

Instinet may bring fixed income into electronic brokerage arena.

NEW YORK -- Instinet Corp., an agency broker for equities, is exploring expansion into electronic brokerage for fixed income .

The company is designing a product for global fixed -income markets in an attempt to bring increased efficiency to U.S. and European dealers, according to a company statement.

Instinet plans to mesh the best attributes of electronic trading and value-added broker services on a global scale, according to Peter Fenichel, managing director and head of Instinet's fixed-income group.

The company offers trading and research services in more than 40 financial markets and, through affiliates, is a member of 17 securities exchanges in North America, Europe and Asia.

Algorithmics Inc. offers risk-management suite.

TORONTO -- Algorithmics Inc. is offering an integrated suite of risk management software products that the company says is the first designed to reduce implementation costs.

Algo Suite 3.1 features analytics for credit and market risk and includes mapping and data transformation, data delivery, warehousing and process management. It also offers detailed risk reports.

The software includes RiskWatch, analytics for credit and market risk management. The upgraded software is faster and provides analysis for marginal deal, and credit-specific risk and marginal value-at-risk measurement.

Algo Suite 3.1 includes a C++ framework for extending RiskWatch; and Risk Script 3.1, a visual type scripting language that supports batch scripting.

Another module in the suite, HistoRisk, which generates scenarios for a set of simulation alternatives, will now generate value-at-risk and other simulation data for multistep Monte Carlo analyses and historical simulation. It will also do variance and covariance analyses.

For more information, call Pamela Ritchie at Algorithmics, at (416) 217-1500.

Princeton releases accounting, real estate software.

PRINCETON, N.J. -- Princeton Financial Systems has released property asset management and accounting software for managing real estate holdings and released trader order management and modeling software.

Princeton's new real estate software tracks income, expenses and market values to provide valuations of real estate holdings, according to a Princeton statement.

The software has AIMR-compliant performance measurement and reporting and permits users to manage complex investment strategies.

Another offering is Princeton's Trader Order Management system. TOM is designed to track the life cycle of a trade from inception of an order through placement, to allocation and to posting in Princeton's PAM portfolio accounting and management software.

Investors can propose an order and check its impact for compliance with various investor or client rules and policies, or check its impact using any electronic model the investor is using.

TOM also provides aggregate numbers on open and placed orders, and provides details of open orders. Users can view the information in connection with an individual security or all of the securities in a portfolio.

Princeton's other new program is PAM Modeling. It is a strategic portfolio asset modeling system that presents various profiles and identifies exposure limits using a range of criteria -- including security identification, issuer, country of origin, currency, manager and maturity date. Users of PAM Modeling can define specific portfolio categories and use them to compare one portfolio against another.

Separately, Equity Trustees Pty. Ltd., Melbourne, Australia, has licensed PAM for Mutual Funds investment management software.

Rietumu Banka, Riga, Latvia, has licensed Princeton's PAM for Securities and PAM for Mutual Funds, investment management and accounting software.

Deere & Co., Moline, Ill., has licensed PAM for Securities, PAM Custodian Trade Notification and Princeton Cash and Market Data Acquisition and Import software modules.

For more information, call Gordon Gacek at Princeton Financial, at (609) 987-2400.

SS&C releases total loan accounting software.

WINDSOR, Conn. -- SS&C Technologies Inc. has released software for total loan accounting, servicing and asset management.

LMS 2000 combines the capabilities of SS&C's FILMS 2000 and MLMS loan accounting systems into a comprehensive loan management tool.

LMS 2000 will integrate the loan management process -- from application and commitment, to servicing and accounting, through loan disposition.

The Windows-based 32-bit client/server LMS 2000 system will leverage the reporting power of a Microsoft SQL Server database, and is fully Y2K compliant.

The software, according to the company, meets industry standards for: commitment and pipeline tracking; internal and external investor servicing and accounting; reporting; portfolio analytics; imaging and geographical mapping; and asset disposition.

LMS 2000 will be delivered via multiple functional areas and modules that allow the loan asset to be broken into cash-flow tiers, each with separate terms, with multilevel accounting and complete cash management tracking.

It also tracks information needed to ensure loan security, including appraisals, operating statements, rent rolls and inspections and also offers modules for mass payment processing, escrow processing, loan overview and investor reporting.

POSIT volume increases 57[percent] in 1998.

NEW YORK -- The number of shares crossed using POSIT, an electronic stock crossing system, increased 57[percent] in 1998 to 5.8 billion shares from 3.7 billion shares in 1997, said officials with Investment Technology Group Inc., developers of POSIT.

POSIT allows pension funds, money management firms and others to cross stocks electronically and confidentially with virtually no market impact and at low commission costs.

In the past eight quarters, POSIT has had a quarterly compound volume growth rate of nearly 9[percent].

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Electronic commerce: lots of interest, little action.

Vigoroso, Mark

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Growing numbers of buying organizations are pursuing e-commerce systems as a critical tool for optimized supply chain management, but most buyers are still taking baby steps. Fact is, the world of online procurement is populated by many crawlers, fewer walkers, and only a handful of runners.

According to a recent reader survey (PUR: Dec. 10, 1998), only 33[percent] of buyers use or plan to use the Internet to conduct transactions. But as more purchasing organizations awaken to the possible benefits of electronic commerce --lower transaction costs, more efficient use of buyers' time, reduced or eliminated "maverick" buying, and shorter cycle times and as buyers' security concerns are eased, e-commerce is likely to become the standard tool for processing transactions in many industries.

On the sell side.

Six or eight years ago, most professionals had no knowledge of the Internet, so it's understandable that today's typical buyer still is only dabbling in e-commerce. Often constrained by upper-management apprehension, purchasers are breaking Internet ground where the least amount of risk and money is involved--sell-side systems.

Sell-side systems are transaction-enabled Web sites that house the electronic product and/or service catalogs of one or more suppliers. Free registration is often the only requisite for buyers to use these sites, which explains why this is the most popular e-commerce model among buyers. Indeed, a majority of buyers polled in Purchasing's most recent survey who are planning to use e-commerce have their sights on sell-side systems.

For example, Dennis Midkiff, senior buyer at Rockwell Automation, visits Grainger's site (www.grainger.com) weekly to source MRO items, and plans to make use of Universal Instruments' site (www.uic.com) to source semiconductor packaging and assembly products. "The convenience of online

buying is driving a shift in procurement strategy at Rockwell," says Midkiff. "And there's just less wasted time than with phone dealings."

Similarly, Don Jones, purchasing manager at California-based Orchard Machinery Corporation, uses sell-side Web sites with a typical "see-what-happens" mindset. "I source direct production materials like electrical systems, hydraulic equipment, paints, and plastics," says Jones. "And I see a definite benefit of time saved, but not so much in reduced costs." A frequent visitor to Grainger's site, John Deere (www.deere.com), and MRO supplier McMaster-Carr (www.mcmaster.com), Jones views the Internet as one more tool in his procurement toolbelt. "Phones and faxes are not going anywhere, anytime soon."

Major North American chemical distributor Van Waters and Rogers believes strongly that business is moving online, and that they need to prepare to meet that demand before it's there on a broad scale. VW&R spokesman John Sammons says, "E-commerce is not an overwhelming requirement right now from buyers, but if we waited until it were, we would be behind the eight ball."

Today, VW&R (www.vwr-inc.com) offers a robust product catalog, with data sheets and regulatory information. When suppliers announce national price changes, they can notify buyers with a single announcement on VW&R's Web site. "Right now, there are some labor savings, convenience, and preference for us and our buyers," says Sammons. "But if those were the only benefits, it wouldn't be worth the investment."

By early March 1999, VW&R plans to implement order entry and material safety data sheet (msds) delivery functions over a secure double key system that will use digital certificates to recognize the identity of a customer's computer. "There are no finished models," says Sammons. "We learn as we go. We try, we improve, and each new step we take opens our eyes to new opportunities."

Later in the year, further enhancements will include certificates of analysis, order tracking, purchase histories, and price books. Buyers will be able to analyze and optimize their individual purchase patterns.

"We've just uncovered the tip of the iceberg," says Sammons. "When we fully integrate with buyers' back-office systems, then that's where the real value will be."

At specialty metals producer Allegheny Teledyne Inc., the purchasing and IT departments have taken sell-side e-commerce solutions one step further. They have built an extranet that provides links to suppliers with

whom purchasing management has negotiated national and international high-volume contracts. Through this secure extranet, buyers at every facility can navigate to secure sections of commerce-enabled supplier sites and purchase goods at contract prices.

"Because of the international scope of our supplier contracts, many of our remote facilities were calling looking for information," says Ernest Gabbard, director of corporate procurement. "So our original intention was to set up an information warehouse, but it has grown into an e-commerce solution."

Allegheny buyers are primarily using the extranet to buy electronic components, software, computers, office supplies, and MRO items. Technologically advanced suppliers such as Grainger and Gateway have been the first to participate.

"Due to the increased sourcing efficiency, our buyers can spend more time negotiating contracts and charting supply strategies," says Gabbard. "And this is just one step in the right direction. There's continuous improvement and advancement to be made."

Supply aggregators.

Granted, there is a wealth of well-equipped supplier and distributor Web sites out there, and once they find them, buyers are indeed enjoying shorter cycle times, reduced paperwork, and more time to work on value-added tasks. But therein lies the problem: finding them. Allegheny Teledyne's efforts to electronically link their buyers with preferred commerce-enabled suppliers are rare. But the concept of culling suppliers into one location is being championed by more and more third-party firms.

Increasingly, technology firms are aggregating the content of several of the major suppliers in a vertical market and offering a one-stop sourcing solution to buyers in that market. These aggregated supply sites, or electronic marketplaces, usually make their money by taking a percentage of each transaction. Buyers can access every relevant supplier from one location and achieve best prices through comparison shopping. The incentive for suppliers is that they greatly increase their chances of being discovered among the Web masses.

In the electronics components and assemblies market, NetBuy (www.netbuy.com) has aggregated over 330,000 unique parts from 55 distributors, representing 1,815 manufacturers and over \$2 billion in inventory. Evelyn Calleja, a buyer at Santa Clara, California-based Twin Industries, uses NetBuy to purchase common items like passives and

resistors.

"We have bought about 50[percent] of our electronic components online in the last three months," says Calleja. "But more complex buys, like integrated circuits, are still managed off-line."

In addition to NetBuy, Calleja also buys electronics products from sell-side sites Digikey (www.digikey.com), Avnet (www.avnet.com), and Newark Electronics (www.newark.com). All told, Calleja has noticed time saved, cycle times cut, and more time for strategic activities as a result of Twin's foray into online buying. "It usually takes us two days to complete a buying job for a project, and we've already cut that by about twenty-five percent," says Calleja.

In the plastics market, the Plastics Network (www.plasticsnet.com) offers what they believe is a solution to the vast market of resins and plastics processing equipment. "Our market is worth \$327 billion per year and is very fragmented," says Nick Stoikja, vice president of the Plastics Network's parent company Commerx Inc. "It has always been hard for buyers to locate accurate information."

The Plastics Network has aggregated resins and plastics processing equipment from about 150 suppliers and is aiming to have 400 to 500 participating suppliers by the end of this year. "We focus on recruiting the top two or three players in each segment of the industry, so buyers will be working only with top-quality suppliers," says Stoikja.

Suppliers upload their catalog content to the Plastics Network server by merging their proprietary databases into a standard template. The standardized product database is then maintained by the Plastics Network staff. At the "purchasing center," buyers can order products from multiple suppliers using a single purchase requisition. After the order is submitted to the Plastics Network, it is automatically separated into multiple components and forwarded to the appropriate suppliers. Each supplier responds electronically to requisitions by accepting the order at the purchasing center. The site is free to buyers, and the Plastics Network takes a 5[percent]-15[percent] cut of each transaction.

With this public-site business model, the Plastics Network already has achieved a certain level of success, drawing 65,000 visitors a month. But, as more e-commerce companies are beginning to realize, the value of sell-side solutions to the buyer is certainly measurable and noteworthy, but it is also limited. Sure, buyers can consolidate purchase-order administration, save time, and even cut costs by finding best prices. But the real value comes from harnessing the technology to control and refine

overall procurement processes. This control can only be achieved if the buying organization is intimately involved with the development, implementation, and integration of the e-commerce system.

The Plastics Network recognized this trend and has partnered with trade'ex Electronic Commerce Systems Inc. to offer a "buy-side" commerce solution. Later this year, the Plastics network will offer a procurement software package for installation on the buyer's desktop, which will integrate with back-office ERP systems and be customized to fit the needs of the buying organization. "We will provide the product and service data, and trade'ex will provide the technology," says Stoijka.

Buyers will be able to monitor and control spending patterns and use volume leverage to achieve lower costs with fewer suppliers. In the longer term, the Plastics Network plans to leverage both their sell-side and buy-side e-commerce solutions to other industries related to plastics.

Buying the buy side.

Buy-side electronic procurement systems like the Plastics Network will meet the demand of some large national and international corporations who are willing to invest huge amounts of money, time, and effort. While low-risk sell-side systems are the most widely used e-commerce models among today's buyers, some firms are aiming for increased purchasing control and efficiency with a fully integrated system inside the walls of their own company.

But to get an idea of how rare buy-side implementations are in today's marketplace, one need only look at the relative prevalence of sell-side and buy-side e-commerce software. Behind every e-commerce solution, whether it be sell side or buy side, is a robust software and hardware infrastructure. And according to a recent report from Forrester Research, in 1998 the sell-side software market was worth \$113 million, while the buy-side market was worth just \$16 million. Even with a forward-looking perspective, sell side will still dominate, as Forrester projects the sell-side market will be worth \$1.4 billion in 2002 and the buy side just \$490 million.

Enterprise buy-side e-commerce systems are in an elite class. They can cost anywhere from \$250,000 to \$5 million to implement, and are woven into back-office ERP systems to achieve optimal integration, automation, and scalability. The resources required to embark on such an end-to-end solution are only at the disposal of large and wealthy corporations. Lacking the financial resources and the long supplier rosters that larger firms have, small to mid-size companies are virtually left on the sidelines. "To justify spending the money on a buy-side system, a company

needs a minimum number of (appropriate) suppliers--at least ten or fifteen," says Stan Dolberg, group director of research at Forrester.

According to a March 1998 report from the Aberdeen Group, a consulting firm in Boston, there are eighteen vendors of Internet-based procurement applications, and very few of them have more than six customers in production. But those companies that make the buy-side investment are likely to see returns. According to the same Aberdeen report, ROI analysis shows payback in less than twelve months.

U.S. pharmaceutical giant Merck & Co., Inc. hopes to see some of that payback. In December of 1998, they chose Ariba Technologies' Operating Resource Management System (orms) to handle their high-volume, low-dollar, non-production goods and services purchases, like laboratory and MRO supplies. orms will be integrated with Merck's back-office financial and accounting systems, so that tasks associated with accounts payable and receivable can be automated. The intranet- and extranet-based application will begin as a pilot in May of 1999 at Merck's major sites, and will roll out to all of its U.S. manufacturing sites by the end of the year.

"We were looking for an efficient way to handle our MRO buys," says Larry Young, procurement manager at Merck. "And Ariba offers a user-friendly interface and a robust catalog management system."

Merck will aggregate the catalogs of thirty suppliers on their intranet, where requisitioners will purchase products from a single pre-approved catalog, thus reducing expensive off-contract spot buying. Merck will be guiding end users to established supplier relationships, and their purchases will be governed by built-in buying rules established by purchasing management.

"This represents a fundamental shift in procurement strategy at Merck," says Young. "The Internet will affect the way we do business, and we have to manage this new environment. Otherwise, our requisitioners will take it upon themselves to buy externally on the Internet."

Merck's decision to broach e-commerce with MRO supplies is typical. "To automate buying, you have to start with standardized interchangeable products that come from multiple supply sources," says Forrester's Dolberg. "Companies don't want to risk possible interruptions in production."

Young estimates that more than 80[percent] of Merck's purchase-order volume is MRO, so the opportunity for increased efficiency is tremendous. In addition to shorter cycle times, more streamlined approval routing, lower prices, and an optimized supply base, Merck is banking on freeing

their purchasing pros to focus more of their efforts on strategic supply chain management initiatives.

"We want to move our buyers to more strategic tasks," says Young. "It is integral to our e-commerce business plan, and upper management has been pushing us in that direction as well."

Without the financial resources of a company of Merck's size, how can the buying organizations of small to medium-size companies approach electronic commerce? Sell-side and aggregated sites afford them marginal time savings and cost benefits but no purchasing control or back-office integration. Buy-side procurement applications offer granular spending control, supplier performance monitoring, and consolidated buying power, but for a stratospheric price tag. To maximize the benefit of Internet technology, buyers likely will need the best of both camps.

Transactive content intermediaries

Market analysts and e-commerce vendors are starting to recognize this conundrum in which the overwhelming majority of U.S. companies are finding themselves. The solution: "Transactive content intermediaries." A few technology vendors are beginning to build online trading communities where multiple buyers and multiple sellers can conduct business. These intermediary communities will host the costly high-grade software and supplier data, and essentially give buyers the control of a buy-side system without the prohibitive price tag.

"These services are a combination of an applications rental and an outsource service," says Forrester's Stan Dolberg. "Buyers get control over their spend and become more effective on the Internet." This control stems largely from the integratability of the trading community infrastructure with the participants' back-office systems.

This open trading platform makes the most sense for smaller firms who don't have the order volume to drive suppliers' prices down. In the aggregated environment of a trading community, participating suppliers can count on a collective volume of orders from all the buyers and can afford to bring prices down for everyone.

One of the first trading communities to emerge is CommerceOne's Commerce Chain solution. Serving as the hub of the communities will be CommerceOne's MarketSite Commerce Portal, where all of the supplier catalog data is housed. Buyers access the portal through their Web browsers and can pull private "views" of the supplier catalog behind their firewall. Larger buying clients can use CommerceOne's buy-side purchasing application

BuySite to interface with the community, but small to mid-size companies will not be excluded, thanks to the purchasing application that is hosted centrally at the commerce portal.

"When the Commerce Chain model started, we used the large supply bases of Fortune 2000 companies to build up the supplier constituency on our commerce portal," says Carl Falk, vice president of procurement strategies. "Now that we have a strong base of suppliers, we can open up the community to smaller companies who can use our hosted purchasing application to have the same buying experience and control as the larger companies."

Orders are transmitted seamlessly to the suppliers' individual order-fulfillment systems, reducing selling and order administration costs for the seller. In a distributed purchasing model, purchasing managers can mandate, by requisitioner, which suppliers and commodities in the community are visible and available for purchase. They can chart budget and commodity approval paths, track on- and off-contract purchase patterns, and optimize their supply base. Once suppliers publish their content to the community, they can make pricing and availability updates in real time.

Some benefits that reportedly accrue to buyers are reduced product costs by 5[percent] to 15[percent], reduced administration costs by 70[percent], and reduced cycle time from requisition to fulfillment from an average of 7 to 2 days.

"Most of the goods involved are MRO supplies and services," says Falk. "This is the low-hanging fruit, where savings can be substantial."

Transparent to the community participants is the technology that makes it all possible, not the least of which is Extensible Mark-up Language (XML). It allows for the open and efficient electronic transfer of business documents over the Internet, as opposed to costly proprietary EDI networks. To make the best use of XML, trading partners must use a standard naming convention for business documents. To this end a Common Business Library (CBL), a public repository of XML "building blocks," is used to create documents like catalogs, purchase orders, and invoices.

"In a vertical market, where everyone can agree on product names, XML can be used in a meaningful way," says Forrester's Stan Dolberg.

As a result of XML technology, buyers participating in CommerceOne's communities have access to a wealth of product information, like technical specification sheets and repair and maintenance bulletins. Suppliers can seize this capability as an opportunity and a challenge to increase their quality and customer-service levels. "If a supplier wants to invest in

higher service levels, it will be recognized by the buyer," says Falk.

This opportunity for suppliers to add value addresses a major problem with buy-side procurement applications, where supplier content is aggregated and published inside the firewall of the buying organization. "When you aggregate the content of several suppliers, there's a danger of washing out anything significant or distinctive about the supplier relationship and ending up with just lists of products," says Dolberg. "Trading communities can preserve the valuable elements of supplier relationships like quality and service."

Another emerging "transactive content intermediary" comes from TPN Register and Oracle Corporation. Since May 1998, they have been working on an online trading environment similar to CommerceOne's Commerce Chain solution. TPN hosts the content of indirect product suppliers, classified according to the Thomas Register scheme, and Oracle provides the integratable procurement applications Oracle Purchasing and Oracle Web Requisitions, through which buyers interface with TPN's aggregated catalog.

"Sell side is the wrong approach," says TPN Register President Raymond Schiavone. "We want to help buyers buy easier in the way they buy today, not by surfing around the Web looking for individual supplier sites."

Participating suppliers can make changes to their data in real time. Buyers are notified of any pricing or availability changes suppliers make and are given the opportunity to approve those changes. A typical exchange like this can take as little as two minutes.

"Our focus is to customize supplier information for the buyer, so that the buyer can find only what they want, and buy it their way," says Schiavone.

Using "shopping cart" functionality and XML technology, orders placed in the community are routed to the appropriate suppliers. While buyers view a private catalog for on-contract purchases, they also have the option to search across Thomas Register's robust database of suppliers and make spot buys. This off-contract buying, however, is monitored by the Oracle system to reduce costly maverick buying and increase price leverage with suppliers.

"What drives strategic sourcing is good catalog data," says Gary Hare, vice president of products at TPN. "That's what we provide, while Oracle provides the purchasing and reporting applications."

Forrester's Stan Dolberg believes online trading communities is the

direction e-commerce should go, to bring the most benefits to the most diverse population of buyers and sellers, but until the base of installed customers grows, the verdict is still out.